Listing of Claims:

1-38. (Cancelled)

39. (Currently Amended) A fibrous substrate comprising:

nanoparticles having a surface area of at least about 50 square meters per gram, wherein the nanoparticles are modified with a metal ion and have a negative zeta potential prior to modification with the metal ion, and wherein the zeta potential of the modified nanoparticles is from about -5 millivolts to about -15 millivolts; and

a binder that durably adheres the modified nanoparticles to the substrate.

40. (Previously Presented) The substrate of claim 39, wherein the negative zeta potential is from about -1 millivolt to about -50 millivolts.

41. (Previously Presented) The substrate of claim 39, wherein the zeta potential of the modified nanoparticles is greater than the zeta potential of the nanoparticles prior to modification.

42. (Cancelled)

43. (Previously Presented) The substrate of claim 39, wherein the metal ion is adsorbed onto a surface of the nanoparticles.

44. (Previously Presented) The substrate of claim 39, wherein the metal ion forms a coordinate or covalent bond with the nanoparticles.

45. (Previously Presented) The substrate of claim 39, wherein the nanoparticles have a surface area of at least about 100 square meters per gram.

46. (Previously Presented) The substrate of claim 39, wherein the nanoparticles have a size of less than about 500 nanometers.

47. (Previously Presented) The substrate of claim 39, wherein the nanoparticles comprise silica.

48. (Previously Presented) The substrate of claim 39, wherein the metal ion includes copper, silver, gold, iron, manganese, or combinations thereof.

49. (Previously Presented) The substrate of claim 39, wherein the substrate contains polyolefin fibers.

50. (Previously Presented) The substrate of claim 39, wherein the substrate is a spunbond web, meltblown web, or combination thereof.

51. (Previously Presented) The substrate of claim 39, wherein the substrate contains cellulosic fibers.

52. (Previously Presented) The substrate of claim 39, wherein the modified nanoparticles constitute from about 0.1 to about 10 wt.% of the substrate.

53. (Previously Presented) The substrate of claim 39, wherein the binder constitutes from about 0.01 to about 5 wt.% of the substrate.

54. (Previously Presented) A personal care product comprising the substrate of claim 39.

55. (Previously Presented) Protective barrier clothing comprising the substrate of claim 39.

56. (Previously Presented) The substrate of claim 39, wherein the nanoparticles and binder are sequentially applied to the substrate.

57. (Previously Presented) A fibrous substrate comprising:

first nanoparticles having a surface area of at least about 50 square meters per gram, wherein the first nanoparticles are modified with a metal ion and have a negative zeta potential prior to modification with the metal ion; and

second nanoparticles having a positive zeta potential that durably adhere the modified nanoparticles to the substrate.

58. (Previously Presented) The substrate of claim 57, wherein the second nanoparticles have a zeta potential of from about 1 millivolt to about 70 millivolts.

59. (Previously Presented) The substrate of claim 57, wherein the first nanoparticles have a zeta potential of from about -1 millivolt to about -50 millivolts prior to modification with the metal ion.

60. (Previously Presented) The substrate of claim 57, wherein the zeta potential of the modified nanoparticles is greater than the zeta potential of the first nanoparticles prior to modification.

61. (Previously Presented) The substrate of claim 60, wherein the zeta potential of the modified particles is from about -5 millivolts to about -15 millivolts.

62. (Previously Presented) The substrate of claim 57, wherein the metal ion is adsorbed onto a surface of the first nanoparticles.

63. (Previously Presented) The substrate of claim 57, wherein the metal ion forms a coordinate or covalent bond with the first nanoparticles.

64. (Previously Presented) The substrate of claim 57, wherein the first nanoparticles have a surface area of at least about 100 square meters per gram.

65. (Previously Presented) The substrate of claim 57, wherein the first and second nanoparticles have a size of less than about 500 nanometers.

66. (Previously Presented) The substrate of claim 57, wherein the first nanoparticles comprise silica.

67. (Previously Presented) The substrate of claim 57, wherein the second nanoparticles comprise alumina.

68. (Previously Presented) The substrate of claim 67, wherein the alumina is coated onto silica.

69. (Previously Presented) The substrate of claim 57, wherein the metal ion includes copper, silver, gold, iron, manganese, or combinations thereof.

70. (Previously Presented) The substrate of claim 57, wherein the substrate contains polyolefin fibers.

71. (Previously Presented) The substrate of claim 57, wherein the substrate is a spunbond web, meltblown web, or combination thereof.

72. (Previously Presented) The substrate of claim 57, wherein the substrate contains cellulosic fibers.

73. (Previously Presented) The substrate of claim 57, wherein the modified nanoparticles constitute from about 0.1 to about 10 wt.% of the substrate.

74. (Previously Presented) A personal care product comprising the substrate of claim 57.

75. (Previously Presented) Protective barrier clothing comprising the substrate of claim 57.